

Appl. No. 10/602,820
Amendment dated: October 18, 2004
Reply to OA of: September 20, 2004

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1(original). A manufacturing method for polyester fine denier multifilament, which is heating polyester polymer of inherent viscosity(IV) 0.5 ~ 0.7 and melting point of 245 ~ 265°C to melt, filter and extruding in constant amount to obtain polyester fine denier multifilament, characterized in comprising the following steps:

a. uniformly spinning said constant amount extruded polyester melt through a multi-layer annularly arranged spinneret orifices to obtain the filament tow, wherein the diameter of outermost layer orifice is set as D_2 mm, and the diameter of innermost layer orifice is set as D_1 mm;

b. passing said spun filament tow under spinneret through a protective delay shroud of length L_s mm and a cylindrical quenching air tube of length L_q mm and diameter of D_0 mm which offers the radial outer-flow quenching air at wind speed of 0.2-0.6 meter/second to said filament tow from the outer side of said cylindrical quenching air tube to uniformly cooled to below glass transition point (T_g) of said polyester polymer for bundling;

c. said D_2 , D_1 , D_0 , L_s , L_q satisfying the following requirements:

- (i) $D_2 - D_1 < 20$ (mm)
- (ii) $12 < D_1 - D_0 < 33$ (mm)
- (iii) $2 < [[L_s]] L_s < 20$ (mm)
- (iv) $15 < [[L_q]] L_q < 40$ (cm)

d. winding said filament tow at the speed of 1800 to 3000 meter / minute.

2(original). The manufacturing method for polyester fine denier multifilament according to claim 1, wherein, the orifice density of spinneret layout (orifice density) is set as 7~21 orifices per square centimeter.

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3(original). The manufacturing method for polyester fine denier multifilament according to claim 1, wherein, the section of said spinneret orifice is selected from one or more than one of the group of circular, hollow, Y type, – shape type, square shape, triangular shape, hexagonal shape, cross shape and C shape.

4(original). The manufacturing method for polyester fine denier multifilament according to claim 1, wherein, the polyester fine denier multifilament obtained has 0.3 to 2.0 denier per filament (d.p.f), uster half inert value ($u\% \frac{1}{2}$ inert) less than 0.3%, variation of thermal stress in spindles less than 2%, elongation at break from 100 to 160%.

Claim 5(canceled).